

NOTES ON THE LIFE-HISTORY OF CERTAIN SAW  
FLIES (GENUS *PERGA*), WITH DESCRIPTION  
OF A NEW SPECIES.

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In the spring of last year I commenced collecting such larvæ of saw-flies (*Perga*) as were obtainable in the neighbourhood of Sydney with the view of investigating their life-history. Not then sufficiently understanding their habits the earliest batches obtained died prematurely. From other broods, however, collected at Botany and at Rose Bay, saw-flies referable to four species were reared; and these were supplemented by three other species bred from a consignment of larvæ sent me from Nundle, N.S.W., by my father.

Though several species in their natural state confine themselves to particular species of Eucalypts, in captivity all my specimens fed freely on the leaves of *Eucalyptus corymbosa*, one of the commonest Sydney gum-trees. A large jar with about six inches of sand and rotten wood on the bottom serves very well as a breeding-cage; and in such a jar with its aperture closed the leaves kept fresh for at least two days. Messrs. Bennett and Scott in their account of *Perga eucalypti* (P.Z.S., 1859, p. 209) state that the larvæ live on *Callistemon* as well as *Eucalyptus*. So far I have not myself met with them on any plant but Eucalypts.

The larvæ of each brood cluster together during the daytime, but at night they separate to feed. Several times just about day-break I have come upon them while scattered, but they soon hurried back to their social clusters.

The cocoons of some species are collected into masses, while of others each cocoon is separate and distinct. Their construction is rather remarkable, for at one end of the cocoon is a second small

cell in which the last moulted larval skin is left, and this is partitioned off from the main chamber in which the metamorphosis is undergone by a lid perforated with numerous fine passages. The perfect insects of species which construct aggregates of cocoons emerge at this end, but those of species forming isolated cocoons make their exit through the side of the cocoon.

The following seven species have been bred by me from larvæ kept at Elizabeth Bay.

# 1. PERGA DORSALIS.

*Perga dorsalis*, Leach, Zool. Misc. (1817) III. p. 117, ♂; Westw. P.Z.S. 1880, p. 262; Kirby, B.M. List of Hymen. (1882), I. p. 18.

♀. *P. scutellata*, West. in Griff. Anim. King. Ins. pl. 76, fig. 2, and pl. 106, fig. 3, Vol. II. pp. 402, 792.

*P. eucalypti*, Benn. & Sc. P.Z.S. 1859, p. 209 (Annulosa), pl. 62 [♀ and larvæ]; Westw. P.Z.S. 1880, p. 362.

This is our largest and most common species, and it has a very wide range, having been recorded from Tasmania, South Australia, Victoria, New South Wales, and Moreton Bay. Leach's type is in the Macleay Museum.

*Larvæ*: black, covered with short white hairs from the eyes to the tail, the thick squamose legs and last two segments of the abdomen yellow. Length,  $2\frac{1}{2}$  inches.

On the 9th November I found a large cluster of larvæ feeding on *Eucalyptus obtusiflora*, at Botany; I placed them in a jar next morning, and on the following day found they had all retired from sight under the sand; they formed their cocoons, which are made of a tough leathery dark brown substance, in a mass side by side, the heads all facing the same way, just covered beneath the sand. They remained in the chrysalid state until the 25th of February of this year; of twelve specimens that

hatched out ten were females and two males. All the measurements of the larvæ and perfect sawfly agree with those given by Messrs. Bennett and Scott of their *P. eucalypti*, and I have not the least doubt that Professor Westwood is right about its being only a synonym.

### 1. PERGA POLITA.

*Perga polita*, Leach, Zool. Misc. III. p. 115 ; Westw. P.Z.S. 1880, p. 363.

This species has been taken at Tasmania, Melbourne, Hunter River, and Moreton Bay, and has no doubt a wider range. Leach's type is in the Macleay Museum.

*Larvæ*: black, covered with short white hairs, the legs, shoulders, and tip of abdomen yellow. Length,  $1\frac{1}{2}$  inches.

I received the larvæ of this species from my father, who sent them by post from Nundle, N.S.W. ; they arrived in good condition on September 23rd. Taken on a eucalypt, locally known as the "white gum;" they readily devoured the leaves of *E. corymbosa*; and on the 10th October betook themselves to the sand, burrowing down to the bottom of the jar, where they formed isolated cocoons, which, covered with particles of sand, were easily overlooked unless the sand was carefully examined. A solitary individual came out on the 20th December, but no more emerged until 5th January, when two more made their appearance, all these being males. No more coming out I examined the remaining cocoons, and found them all tenanted by dipterous larvæ (Fam. *Tachinidæ*).

### 3. PERGA CHALYBEA, n.sp.

Head: antennal tubercle, two marks between the antennæ, labrum and outer margins of eyes yellow; jaws, eyes, and vertex black; thorax black, rugose, densely punctured, pronotum yellow, fore and middle legs yellow, hind legs with apical half of femora,

tibia and tarsi, with the exception of base of first tarsal joint, black ; a large irregular white mark on the side of the mesothorax ; metathorax shining blue black ; scutellum white, bisected in the centre by a black impressed line ; abdomen bright shining blue, second and following segments marked on the outer margin with triangular white marks, anal segment white, under side luteous grey ; wings vitreous, costa, stigma, and nervures ochreous. Exp. fore-wings 12 lines ; corp. 7 lines.

*Hab.*—S. Australia (one ♂ specimen in Macleay Museum) ; Nundle, N.S.W. (larvæ).

This species comes near *P. dahlbomii*, Westw., and belongs to Section ii. of Kirby's Classification.

*Larvæ* : black, densely covered with white hairs, the legs and tip of abdomen yellow. Length  $1\frac{1}{2}$  inches.

The larvæ were received at the same time and from the same locality as in the preceding case. They constructed the same sort of cocoons as the previous species, and were about the same time undergoing their metamorphosis. Five specimens all males.

#### 4. PERGA LEWISII.

*Perga lewisii*, West. Trans. Ent. Soc. Lond. I. p. 234, and Proceedings II. p. XLIV. ; Arcan. Ent. I. p. 23, pl. 7, fig. 1 ; P.Z.S. 1880, p. 374.

An interesting account of this species is given by Professor Westwood from information supplied by Mr. R. H. Lewis, who noticed the remarkable habit of the female's watching over her young for a month or six weeks after they are hatched ; but he did not record much about their metamorphosis.

*Larvæ* : dirty brown, covered with short brown hairs, the legs and last segment of abdomen pale yellow. Length 17 lines.

My specimens of larvæ all came from Nundle. They were said to live on saplings of the "stringy bark," but fed freely on our common gum leaves. They cast their skins twice, and on 10th

October instead of burrowing into the sand crawled under the bits of rotten wood on the top of the sand, and attached their cocoons to them. The first two came out on 9th December, but no more appeared until January 21st when some thirteen hatched out during the week. The male of this species is I believe unknown; all my species were females, and though there are some thirty specimens among the Macleay collection duplicates they are all of the same sex.

#### 5. PERGA LATREILLEI.

*Perga latreillei*, Leach, Zool. Misc. III. p. 116; Westw., P.Z.S., 1880, p. 372, pl. xxxvi. fig. 3.

♀. *Perga spinolæ*, Westw., P.Z.S., 1880, p. 371, pl. xxxvi. fig. 4.

*Larvæ*: pale brown, more slender than usual, the posterior segments tinged with dark brown. Length 14 lines.

From this bunch of larvæ, which certainly contained only one species of larvæ, I bred the two above species; so it is evident though they are not quite alike, that *P. latreillei* must be the male, of *P. spinolæ*, as the specimens of *P. latreillei*, two in number, were both males, while of the latter there were nine, all females; on turning to Westwood's Monograph I found that the female of *P. latreillei* is unknown, and that the female only of *P. spinolæ* has been found. The larvæ were found at Rose Bay on November 19th feeding on *Eucalyptus corymbosa*. They disappeared a week later, and finding a number of dead larvæ on the surface of the sand in their jar, I removed them, and placed the jar on one side thinking they were all dead. On February 15th I was surprised to find a saw-fly buzzing about in the jar, and on examining the contents found a mass of cocoons united together in the same manner as those of *P. dorsalis*, about two inches beneath the sand. From these cocoons were obtained nine specimens of *P. spinolæ* and two of *P. latreillei*. The latter was originally recorded from South Australia, the former from Melbourne.

## 6. PERGA FÆRSTERI.

*Perga Færsteri*, West P. Z. S. 1880, p. 368, pl. xxxvi. fig. 1.

*Larvæ*: uniform black without any yellow on the legs or abdomen. Length  $1\frac{1}{2}$  inches.

I took a cluster of the larvæ of this species feeding on *Eucalyptus corymbosa*, at Rose Bay, on October 14th. They went into the sand three days after, making isolated cocoons at the bottom of the jar. The first one did not emerge until May 3rd, and during the week six more came out; of these two were males and five females. As only the male has been described and the female differs considerably, I give a brief description. Female differs from male in having the hind portion of head and the V-shaped middle lobe of the mesonotum reddish-brown; the three posterior segments of the abdomen reddish-brown; the white markings on the sides of the abdomen much smaller; and the wings only slightly clouded at the tips.